confusion of doctrines immovable ideas and true laws as to render chemistry an exact science, for it lies now on mathematical truth."

Cannizzaro replied to the congratulations in an interesting speech, which we hope to refer to more fully in a future issue. In the course of his remarks he referred to the confusion and uncertainty which dominated chemistry between 1850-51 on the criterions for determining atomic weights and on the value of formulæ, giving an account of the attempts made by others and himself to reduce chemical notation to law and order.

He afterwards referred to the subject of the division of pure science from teaching. He cited De Candolle's book, "Histoire des Sciences et de Savants," to the effect that the two functions of teaching and contributing to the science progress are to be separated. De Candolle hoped for the time when academies would be formed by free investigators. Cannizzaro is of contrary opinion, and dwelt upon the utility of teaching. He said: "Had I not been a teacher, my publications would not have appeared, and I should have continued to disseminate science of new carbonium compounds. I bring here Lord Kelvin's example, who, in his last jubilee, spoke of the utility he had found by the continued conferences with his scholars."

In speaking upon chemical laboratories, Cannizzaro expressed the opinion that the Director ought to dwell in the same building where the laboratories are situated. He thinks the German type of laboratory the best of all; for he said: "The chief must be considered in a scientific institute as the first, and more useful instrument."

Cannizzaro concluded by referring to the large sum obtained by subscription on occasion of his jubilee, and devoting the remainder of it to the extension of the Roman laboratories.

The celebration was concluded amid great enthusiasm and prolonged applause. A. MIOLATI.

THE FINAL ENTOMBMENT OF PASTEUR.

THE remains of Pasteur, which for nearly fifteen months have been lying at Notre Dame, were on Saturday, Dec. 26, borne in solemn procession to their last resting-place at the Pasteur Institute, where a crypt worthy to hold the ashes of that great benefactor of the human race has been constructed. The subjoined report, slightly abridged from the *Times*, shows that the ceremony of the final entombment was an impressive one, and that representatives of British science were among those who, by their presence and their words, testified to the high regard in which the name of Pasteur is held.

As at the original funeral, there were present a number of eminent men of science and thinkers, both French and foreign, and the ceremony derived additional grandeur from the gathering which witnessed the final interment. The man whose ashes lie in this tomb erected by filial piety and universal admiration is depicted in a sentence from his reception speech at the Academy which the architect has inscribed on the stone: "Heureux celui qui porte en soi un dieu, un idéal de beauté, et qui lui obéit—idéal de l'art, idéal de la science, idéal de la patrie, idéal des vertus de l'évangile." The English deputation included Sir Joseph Lister, President of the Royal Society, Sir Dyce Duckworth, Sir John Evans, and Sir William Priestley. Dr. Metchnikoff represented Russia, and Dr. van Hoorn Holland. M. Méline and M. Rambaud represented the Government, and M. Brisson, a number of ex-Ministers, Senators and Deputies, many members of the Institute and the Prefects of Police and of the Seine were among those present.

There was, first of all, a service at Notre Dame, attended by the family and the staff of the Pasteur Institute, who then, with the archpriest, followed the hearse to the Institute. A crowd had collected outside, and amid an impressive silence every head was bared as the coffin was carried up the steps through the grand vestibule and down to the crypt, which was decorated by the wreaths sent by English, Russian, and French societies and institutions. The parish priest pronounced the last prayers as the coffin was deposited in its last resting-place in the presence of the family. They then remounted the steps to the entrance of the crypt, where all the spectators were stationed, and M. J. B. Pasteur, addressing the Council of the Institute, said: "I entrust to you this tomb which we have raised to our father in this Institute which he loved so dearly. We beg you to preserve it carefully." M. Bertrand, President of the Council, thanked the family for their pious idea, thanks to which, he said, the pilgrims who would come from all parts of the world to honour the memory of the great benefactor of mankind would be able to meditate by his tomb. M. Rambaud, Minister of Education, next delivered a warm eulogium. "As those tombs of saints," he said, "on which people saw prodigies accomplished, that of Pasteur will be encircled by a halo of miracles. At every discovery beneficial to mankind, at every ray of scientific glory which will be added to the aureole of France, the gratitude of the country and of the universe will flow to this building, henceforth august in the annals of science, as to the source of all ulterior progress." M. Baudin, President of the Municipality, was the next speaker, and an address by M. Legouvé, the father of the French Academy, was read by M. Gaston Boissier.

Sir Joseph Lister then said: "Je suis chargé de représenter la Société Royale de Londres, le Collége Royal des Chirurgiens d'Angleterre et la Société Médico-Chirurgicale de Londres. Aussi j'ai fait déposer, de la part de l'Institut Britannique de la Médecine Préventive, fille de l'Institut Pasteur, une couronne ici. Il y a quatre ans, à l'occasion du jubilé de Monsieur Pasteur, j'ai eu le suprême honneur de lui présenter, au nom de la Médecine et de la Chirurgie du monde entier, l'hommage de leur reconnaissance. Aujourd'hui j'assiste à ses funérailles! Cette cérémonie est noble et imposante, digne de la mémoire de notre vénéré maître. Mais elle nous remplit d'une profonde tristesse, puisqu'elle nous rappelle que cette grande lumière de la science, si ardente et si claire, est éteinte; que ce caractère, si noble et si aimable, a disparu de notre monde."

Sir Dyce Duckworth spoke as follows: "Au nom du Collége Royal des Médecins de Londres, j'ai l'honneur de témoigner la vive sympathie avec laquelle les médecins d'Angleterre s'associent à cette touchante cérémonie. Je porte l'hommage de nos confrères à ce grand génie créateur, à ce noble caractère de Louis Pasteur. Pour nous il est un des prophètes de la science, il en est un des avant-coureurs les plus éclairés et les plus intrépides. Vénérons ensemble ce bienfaiteur de l'humanité! Vénérons ce Chrétien loyal et convaincu, dont la foi a résisté à toutes les influences matérialisantes de ses études! Que l'œuvre de Pasteur, dont les cendres reposeront désormais dans ce sol consacré par son travail, reste une des gloires impérissables de la France et du monde!"

Sir W. Priestley said the two Scottish Universities of Edinburgh and St. Andrews appointed him as their representative, in token of respect for the memory of one who had done so much to advance the interests of science, and who had conferred such signal benefits on mankind. He remarked that Pasteur not only made great discoveries himself—discoveries which had conferred priceless benefits on man and on the lower animals—but he opened up new and hitherto unexplored paths in the field of science, the horizon of which was almost unlimited.

M. Cornu, for the Academy of Sciences, M. Bergeron, for the Academy of Medicine, M. Perrot, for the Normal School, M. Louis Passy, for the Agricultural Society, M. Tissier, for the medical students, and M. Duclaux, director of the Pasteur Institute, also spoke. A feeling of restrained emotion prevailed during the entire ceremony, at the conclusion of which the spectators passed respectfully before the tomb and greeted the widow and family of the illustrious investigator.

NOTES.

WE deeply regret to have to record the death of Prof. Emil Du Bois-Reymond, the eminent professor of physiology in the University of Berlin. Before his burial in the French cemetery in Berlin, on Tuesday, addresses were delivered in the Physiological Institute, of which Du Bois-Reymond was the founder. The Emperor and the Empress Frederick have telegraphed expressions of condolence to the widow and relatives of the deceased.

A BOTANICAL Institute has recently been opened in connection with the Botanical Garden at Münster, in Westphalia.

IN deference to public demand, the new aquarium of New York City will be open to visitors on Sunday after January 1.

THE report that M. Nobel, the inventor of dynamite, has bequeathed his property, estimated at fifty million francs, to the University of Stockholm, is contradicted.

A PLAN is proposed in the American botanical journals for the establishment of an American tropical botanical laboratory on the plan of that at Buitenzorg, either on the east coast of Mexico, or on one of the islands near the Caribbean Sea.

THE *Botanical Gazette* states that a notable cactus-garden has been established at the University of Arizona. It is the purpose to bring together eventually all the Cactaceæ indigenous to the United States; already more than one hundred species are represented.

PLANS have been prepared for the buildings in the Botanical Garden of New York City. The buildings, with their approaches, will occupy twenty-five acres of ground. They will be dispersed in different parts of the grounds, throughout the garden, and not grouped together.

WE regret to announce the deaths of Mr. G. F. Schacht, treasurer of University College, Bristol, and formerly vice-president of the Pharmaceutical Society of Great Britain; Dr. L. J. Sanford, formerly professor of anatomy and physiology in Yale University; and Dr. Emil Wolff, of Stuttgart, well known for his works in agricultural chemistry.

A VERY remarkable landslip occurred early on Monday morning, at Rathmore, about twenty miles to the east of Killarney, and on the confines of the county Cork. As a result, possibly, of the almost incessant, heavy rains of the past few weeks, a considerable portion of bog land slipped from its position, and, taking a southerly direction, swept everything in its course for a mile or two. As a result of the slip a considerable tract of country has been submerged, and the rivers in the neighbourhood are flooded with peaty water.

THE Academy of Natural Sciences of Philadelphia has decided to confer the Hayden Memorial Award for 1896 upon Prof. Giovanni Capellini, of Bologna. Capellini was born in Spezia, August 23, 1833. While yet a student he had made important palæontological discoveries and was in correspondence with illustrious investigators, both Italian and foreign. In September 1859 he was appointed Professor of Natural History in the National College of Genoa, and in the following year he became Professor of Geology and Palæontology in the University of Bologna. The rich collections made by him in Nebraska and elsewhere, while on a visit to North America in 1863, are now in the Geological Institute of Bologna. In 1864 he made interesting scientific discoveries in the petroleum lands of Wallachia. As President of the Second Extraordinary Reunion of the Italian Naturalists in Spezia in 1865, he founded the International Congress of Anthropology and Prehistoric Archæology. He was made Vice-President of the First International Geological Congress in Paris in 1878, and obtained its assent that the second meeting should take place in Bologna in 1881. Elected actual President (in conjunction with Quintino Sella as honorary President) of this Congress, he inaugurated the commission for the unification of geological nomenclature and a commission for the production of a geological map of Europe, outlined at Berlin. Together with Sella he founded, on that occasion, the Italian Geological Society. In 1885 he directed, in great part, the third International Geological Congress in Berlin, and contributed not a little to its success, as also to that of the fourth session in London in 1888. He had now published 140 scientific communications. Having served as Rector of the University of Bologna at intervals from 1874 to 1888, in the latter year he organised and directed a celebration of its eighth century, for which he received letters of congratulation from all the universities of the world. He has been decorated by the Emperor of Germany and other Sovereigns. The University of Edinburgh conferred upon him through its Rector the diploma of Doctor "Honoris Causa." The University of Moscow nominated him honorary Professor. Seventy of the principal academies of Europe and America have registered his name among their members. He was elected a Correspondent of the Academy of Natural Sciences of Philadelphia in 1863.

THE American naturalists continue their researches into the variations and distributions of the multitudinous small mammals of North America with great industry. Besides the labours of Dr. Hart Merriam, to some of whose remarkable memoirs we have lately called attention, we have recently received copies of papers by Mr. G. S. Miller, jun., on the "Beach Mouse of Muskeget Island" (*Microtus breweri*), and by Mr. C. F. Batchelder on the distribution of various rodents in New England and Northern New York.

THE first part of vol. xviii. of Dr. Jentink's "Notes from the Leyden Museum," which we have lately received, contains mostly papers on entomological subjects. There are besides these, three communications from Dr. J. Büttikofer on birds, including the description of a new duck from the island of Sumba (*Anas salvadorii*), which presents rather anomalous characters. It is curious that many of the contributors to this Dutch periodical write in English (which is likewise the language of the title-page), though others use French and German.

SOME American naturalists have taken to give not only the year and month, but even the day and hour of the "distribution" of their "advance sheets." To such an excess is the rush for "priority" now carried! Mr. Outram Bangs has lately made out that the reindeer of Newfoundland (known to be abundant there since the discovery of the island) possesses certain differential characters from the continental forms, and names it *Rangifer terræ-novæ*, dating the notification of this important event on "Wednesday, November 11, 1896, at 5 o'clock p.m." We trust that no British naturalist has yet made the same discovery, or grave international complications may arise.

THE distribution in time of the after-shocks of earthquakes was successfully investigated two or three years ago by Prof Omori, of Tōkyō (see NATURE, vol. li. p. 423). In an interesting supplement to his valuable memoir, Prof. Omori discusses the after-shocks of the great Japanese earthquake of November 4, 1854, and shows that their decline in frequency obeys the same law as those of the more recent cases examined. The monthly number (y) of after-shocks at Tosa until the end of 1855 is found to be given very nearly by the equation $y = 225{\cdot}2/(x + 1{\cdot}098)$, where x is the time expressed in months, since December 1854. For the whole year 1895, this equation would give between five and six shocks, while, during the years 1885–91, the mean annual number of shocks actually recorded at Tosa was 4·3. The agreement is so close that Prof. Omori seems justified in regarding it as not accidental.

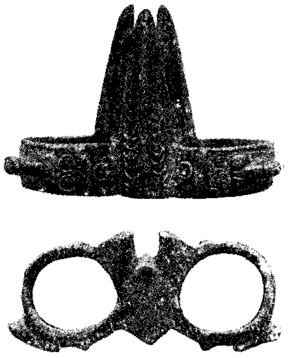
THE *Boletin de la Sociedad Geográfica de Madrid* contains a paper by D. Emilio Bonelli, describing recent explorations in the island of Fernando Po. The coast of this island has long been fully known, but the forest regions surrounding the Peak of S. Joaquin have not hitherto been penetrated. On an excursion round the Bay of Concepcion, Father J. Juanola, a missionary, found himself at the edge of a funnel-shaped chasm some 300 metres in depth. At the bottom of this funnel, probably the crater of an extinct volcano, was a lake about 1200 metres long and 800 metres wide at its broadest part, to which the name Lago Loreto was given. So far as appeared, this lake had no outlet, and was fed by a subterranean stream; the surface was estimated at 1350 metres above sea-level, and the surface temperature of the water was 14° Réaumur.

DIRECTOR KELMERT has presented to the Prussian Academy of Sciences a memoir on the variations of the force of gravity along a line from Kolberg to the Schneekoppe, by Arnswalde, Gröditzberg, Grunau, and Giersdorf, founded on a combination of German and Austrian observations at twenty-two stations. A normal curve of change of intensity is drawn between the two points, and the departures from this curve at particular stations are discussed in detail. The *Mittheilungen* of the Geographical Society of Vienna contains an abstract of the results, which show that an abnormal increase in the force of gravity can be traced to the presence of dense rock masses below the surface, and an abnormal decrease to the partial or total removal of unexposed strata. Under certain assumptions it is possible to estimate the thickness of these subterranean strata; on the Pomeranian lake plateau a layer of about 210 metres in thickness is responsible for increased intensity, while near the Schneekoppe a decrease, which cannot be ascribed to lower density at the surface, is probably due to subterranean layers 200 metres in thickness. These disturbing elements do not in all probability lie deeper than 20 or 30 kilometres. The deflections of the plummet from the vertical are also discussed with interesting results; the maximum deflection, amounting to 18·1″, was observed at the Alter Bruch Station on the slopes of the Schneekoppe, at an elevation of 917 metres.

IN the current number of the *Atti dei Lincei*, Dr. G. Folgheraiter concludes his investigations on the state of terrestrial magnetism in the Etruscan epoch as revealed by observations of old vases (see p. 40). The results appear to indicate that in the eighth century B.C. the magnetic dip in Central Italy was small, and in the reverse direction to what it is at the present time, so that a magnetised needle at that epoch would have assumed a position with its south instead of its north pole pointing downwards. Some two centuries later, the declination seems to have approached the value zero, the earth's magnetic field being nearly horizontal, while in many of the vases the direction of polarity is the same as at the present time. There are, of course, many difficulties in the way of drawing precise conclusions from these observations—such, for example, as the uncertainty as to the date of fabrication of the vases; but the results are sufficiently consistent to establish the validity of the method. Dr. Folgheraiter points out that the prevalence of austral magnetism at the bases of Etruscan vases might be interpreted either on the supposition that the magnetic equator has been so displaced as to pass to the north of Etruria, or by admitting that the northern and southern hemispheres had their magnetic polarity opposite to that of the present time, and that the latter state may have been arrived at by successive variations in the magnetic declination. The present state of knowledge does not permit more weight to be given to one hypothesis than to the other; nevertheless, the author already has an idea of trying if it may be possible to throw some light on this question by means of suitable investigations.

THE latest number of the *Centralblatt für Bakteriologie*, Part ii., contains a paper by Messrs. Stutzer, Burri, and Maul, on the capability of growing on foreign culture media exhibited by the *Bacillus radicicola*. These bacilli have attracted a great deal of attention recently in connection with Dr. Nobbe's investigations. It will be remembered that Nobbe has isolated out seventeen or more of these nitrogen assimilating bacteria from the root-nodules of various leguminous plants, and has endowed them with the collective title of Nitragin. The present memoir describes some experiments made with these novel bacterial soil fertilisers derived from lucerne plants. Culture media were prepared from these plants, and also from white mustard plants, by adding to the infusions respectively derived from them, gelatine and grape sugar, the whole being then sterilised as usual. Lucerne-nodule-bacteria were inoculated on to both these different media, and their cultivation was carried on through several generations. Whereas on the lucerne gelatine the bacteria flourished abundantly up to the last, on the mustard gelatine they gradually faded away. It was next tried if these lucerne-nodule-bacteria could be induced to thrive on this mustard medium by gradually training them to become accustomed to this foreign soil. In the course of six months these bacteria had completed their education, and they accepted the mustard gelatine as eagerly as they had before the lucerne gelatine. This highly successful result led the investigators to think that possibly in the interval these bacteria might have lost all taste for their original culture food, but inoculation from these mustard-grown bacilli on to lucerne gelatine showed that this anticipation was not justified, for they grew with their usual luxuriancy. It would be interesting to determine if by suitable training nodule bacteria could be induced to fertilise or "nodulise" leguminous plants other than those from which they were originally derived.

ARCHÆOLOGISTS have long been puzzled over certain bronze objects about 3 inches in length, which consist of two rigid rings united by a short band, from which three spurs project. These may be found in collections of Etruscan, Roman, and Greek antiquities in museums, where they are usually labelled as bow-pullers. Mr. E. S. Morse, the Director of the Peabody Academy of Science, has been interested for seven years in these problematical objects, and now carefully describes and figures a number of them in the *Bulletin of the Essex Institute* (vol. xxvi., 1894, p. 141). Some ten purposes have been suggested for their use; as a practical archer the author dismisses the bow-puller hypothesis, and, indeed, he says he must "reluctantly yield the solving of the enigma to others, having got no nearer an explanation of it than when I first began." Perhaps the most plausible view is that it may have been bound to the band to enable a chariot driver to hold the reins more firmly in driving.



DR. F. TETZNER concludes in *Globus* (Band lxx. Nr. 18) his series of four articles on the ethnography of the Kaschuben of the Leba Sea, in North-west Pomerania. The Kaschuben are the last Slavonic remnants of the Pomeranians in this district. He gives an interesting account of the folk-lore of this remote people, including some folk-songs, rhymes on grave-stones, and a few verses of children's singing-games, among which is the widely-spread "Ringel, ringel Rosenkranz"; but poor though the Kaschuben are in songs, they are rich in traditions and folk-tales. "Stupid Hans," who is so popular in German, Slavonic, and Lithuanian tales, plays the chief part in their märchen and narratives. Another important incident is "The Cheated Devil"; "The Wild Huntsman" comes next in popularity to the Devil as every one has seen him. The articles conclude with sections on manners and customs and festivals.

FROM the concluding summary of the paper on "First Records of British Flowering Plants," in the *Journal of Botany*, it appears that, of the 1440 species now reckoned as British, 510 have been discovered within the last two centuries, since the time of Ray. The earliest records are by Turner, 1538–1568, who seems to have known about 230 species; by Ray's time this had been increased to 725; and he brought the number of British flowering plants up to 930.

AN interesting fact in connection with the Schwendenerian theory that lichens are compound organisms consisting of an algal and a fungal constituent, which carry on a mutually symbiotic existence, is contributed to *Le Botaniste* in a paper by M. P. A. Dangeard. He states that a common and destructive disease of the Lombardy poplar in Italy is caused by a species of *Calicium* which he finds on the living branches, and which he names *C. populneum*. The genus is usually placed among the lichens; but this species is a pure fungus, destitute of any algal constituent, and carries on a parasitic life on the living tissues of the host.

A VERY remarkable degradation of the ovule takes place in some genera of parasitic plants, and is especially described by M. P. van Tieghem in a paper in the *Bulletin* of the Botanical Society of France, in the case of some Balanophoraceæ and Loranthaceæ. In one section of the former order there is in each carpel a single hypodermal endosperm-mother-cell which becomes the embryo-sac. A similar phenomenon occurs in *Arceuthobium* among Loranthaceæ, where two endosperm-mother-cells are produced at opposite sides of the ovarian cavity, and where, therefore, there is a placenta, but no ovules. In *Balanophora* the reduction is carried still further; the monocarpellary ovary produces beneath the epiderm a single endosperm-mother-cell; there is, therefore, here neither ovule nor placenta. This reduction of the ovule is frequently accompanied, especially in certain genera of Loranthaceæ and Balanophoraceæ, by a peculiarity in the mode of impregnation, which van Tieghem terms (in a paper in Morot's *Journal de Botanique*) *basigamous*, in contrast to the usual acrogamous mode. The ordinary position of the "egg-apparatus" or embryonic vesicles and of the antipodals is here reversed, the former being located at the lower, the latter at the upper end of the endosperm-mother-cell. This fact seems to confirm the theory that there is no physiological difference between embryonic vesicles and antipodals, except that the former are usually active, the latter inactive.

THE Austrian Meteorological Society has published an index to the first twenty volumes of its *Zeitschrift*. The work has been prepared by Dr. S. Kostlivy in a very careful manner as a mixed author and subject catalogue, arranged alphabetically. It is well known that the *Zeitschrift*, which was edited by the late Dr. Jelinek and by Dr. J. Hann, is a complete repertorium of climatology and terrestrial magnetism for all parts of the globe. This handy index, referring to the years 1866–85, will therefore be a boon to scientific men who may wish to obtain the results of observations made in any particular locality, without the trouble of referring to, and reducing the original records.

THE Meteorological Observatory of Upsala has published a series of concise tables for photogrammetric measurements of clouds. The usual calculations for determining the height of clouds are always tedious, especially when the photogrammetric method is employed, which, although it renders much greater precision possible than direct methods without photography, introduces fresh corrections and reductions. The tables in question, which have been calculated by Mr. J. Westman, will be found useful for the solution of the trigonometrical values of the cloud measurements which are now being specially made in various countries, in accordance with the wish expressed at the Meteorological Conference at Munich.

MR. W. F. CLAY, of Edinburgh, has sent u a copy of a new and enlarged reference list (No. 80) of books and memoirs on chemistry and the physical sciences generally. Individuals or institutions desiring to add important works to their libraries should procure a copy of Mr. Clay's catalogue.

THE following are the arrangements for lectures at the Royal Victoria Hall, Waterloo-road, S.E., during January, on Tuesday evenings, at 8.30:—January 5, Prof. H. G. Seeley, F.R.S., on the heat of the earth; January 12, Mr. A. Smith Woodward, on Syria and the Syrians; January 19, Mr. A. E. Tutton, on the glaciers and snowfields of the higher Alps.

WE have received the *Papers and Proceedings* of the Royal Society of Tasmania for 1894–95. The volume contains some interesting historical papers: one on the deportation of the Norfolk Islanders to the Derwent in 1808, by J. B. Walker; another on a MS. chart in the British Museum, showing Tasman's tracks in the voyage of 1642–44, by A. Mault; and a third, on early voyages to Papua in 1511 and 1545, by J. R. McClymont. A large number of field observations in botany, geology, zoology and ornithology are put on record, and Mr. H. C. Kingsmill gives an account of meridian observations with the Hobart transit instruments. The Society is largely interested in Antarctic exploration, and in the extension of the Australian meteorological service.

AN important addition to the synthetical methods for the preparation of carboxylic acids has been made by Messrs. Bredt and Kallen, whose work is recorded in the last instalment of the *Annalen*. They have found that unsaturated acids which contain two negative radicles united with one of the unsaturated carbon atoms readily unite with the elements of hydrocyanic acid, when the corresponding ethereal salt is boiled with a solution of potassium cyanide in dilute alcohol. Ethyl benzylidenemalonate, for example, which is formed by the condensation of benzaldehyde with malonic ether, is thus converted, with the loss of a carboxyl-group, into ethyl β-phenyl-cyanopropionate, $C_6H_5.CH(CN).CH_2.COOC_2H_5$, from which phenylsuccinic acid can easily be prepared. Certain unsaturated lactones, such as coumarin, also readily unite with hydrocyanic acid in this way, and there can be little doubt that the new reaction will prove of immense importance in the development of our knowledge of the carboxylic acids.

OWING to the fact that lithium is the only substance with which nitrogen will directly combine at ordinary temperatures, considerable interest attaches to the properties of the compound thus formed, lithium nitride. This compound, as M. Guntz showed some months since, is easily prepared by the combustion of lithium in nitrogen gas, and the specimen thus obtained was regarded as pure, since the nitrogen absorbed corresponded almost exactly with that required by the formula Li_3N. But in spite of this coincidence M. Guntz now shows that the product is not pure, as at the moment of combination the lithium attacks the boat in which it is held, although it is difficult to say exactly in what form the metal goes into solution in the molten nitride. Thus working with iron boats, the nitride contained from 2 to 8 per cent. of iron, and nickel is even more strongly attacked. Silver, platinum, quartz, and graphitic carbon were all tried, and found to be even less suitable than iron. Measurements of the molecular heat of formation of the nitride gave a value of 49·5 calories, or less than the value for the equivalent quantity of lithium hydride (65 calories). From this the conclusion was drawn that hydrogen ought to decompose the nitride of lithium with formation of the hydride, and this was found to be the case. The reaction, however, can be reversed, since at a high temperature a stream of nitrogen converts the hydride into the nitride.

THE additions to the Zoological Society's Gardens during the past week include a Golden Eagle (*Aquila chrysaetus*) from Norway, presented by Lord William Beresford, V.C.; a Raven (*Corvus corax*), British, presented by Mr. J. Collingham; two Tree Frogs (*Hyla arborea*), European, presented by Master Kneeshaw; a Grey Parrot (*Psittacus erithacus*) from West Africa, deposited.

OUR ASTRONOMICAL COLUMN.

COMET PERRINE (DEC. 8).—In *Astronomischen Nachrichten* (No. 3391) are given the elements and an ephemeris of the comet which was discovered by Mr. Perrine on December 8 last. This shows that the comet is decreasing in declination and increasing in right ascension, its position for December 30 being given as R.A. (apparent) 3h. 9·7m., Decl. (apparent) – 0° 9′. Its brightness is now about half what it was on December 10. The elements, communicated also by Dr. F. Ristenpart, are very nearly similar to those referred to above. These are given in a later number of the *Astronomischen Nachrichten* (No. 3393), together with an ephemeris, calculated by Dr. Ristenpart, up to the middle of January, from which we make the following extract:—

12h. Berlin M.T.

1897.	R.A. 1897·0 h. m. s.	Decl. 1897·0 ° ′	log *r*.	log. Δ.	Br.
Jan. 1	3 28 11	– 0 49·1			
2	33 28	0 56·7			
3	38 38	1 3·5	0·1030	9·6149	0·46
4	43 41	1 9·5			
5	48 36	1 14·7			
6	53 24	1 19·2			
7	58 5	1 22·9	0·1123	9·6482	0·38
8	4 2 38	1 26·0			
9	7 5	1 28·4			
10	11 25	1 30·2			
11	15 39	1 31·4	0·1222	9·6823	0·31
12	19 48	1 32·0			
13	23 52	1 32·1			
14	4 27 46	– 1 31·6			

A matter of some interest is the similarity of the elements which have been obtained by Messrs. Hussey and Perrine, and those of Biela's comet. The following shows the two systems of elements:—

	Perrine.	*Biela* 1832 *III.*
T =	1896, Nov. 25·67 M.T.G.	1832, Nov. 26·4 M.T.G.
ω =	164° 36′	109° 56′
☊ =	243 49	248 12
i =	16 29	13 12
q =	1·1540	0·8793

"HIMMEL UND ERDE."—The astronomical contributions to the December number of this monthly include, besides a somewhat lengthy obituary notice of M. Tisserand (with a portrait), the last of a series of articles by Dr. G. Witt on the planet Saturn, several illustrations accompanying the text; such recent work as that accomplished by Keeler regarding the constitution of the ring as deduced from the movement of the lines in the spectrum, and Campbell's spectroscopic work are both referred to at some length. Of the shorter articles, an interesting account is given of Prof. Newcomb's important work on the transits of Mercury across the sun's disc. By using newly-constructed sun- and Mercury-tables, Prof. Newcomb still found that differences between calculated and observed values were obtained. How to account for these was his next object of research. Might not such differences be due to a false assumption in assuming that the earth rotates at a constant speed around its axis? Or are they the results of inequalities in the moon's motion? Prof. Newcomb finally concluded that in the mean motion of the moon there must be one, if not more inequalities of long period which our present theory has not yet analytically proved.

ASTRONOMICAL SOCIETY OF FRANCE.—The *Bulletin* of this Society for the month of December contains, among other matters, an interesting address by M. Janssen on the late Director of the Paris Observatory, M. Tisserand. M. Gilbert concludes in this number his article on the mechanical proofs of the rotation of the earth, dealing here chiefly with the experiments made with various kinds of gyroscopes. Among the notes will be found a description, by M. Camille Flammarion, of a pulpit sculptured in wood, having the form of an inclined terrestrial globe with the continental outlines worked on it. The south pole is situated underneath, and bears the inscription, "Regiones australes incognitæ." It was constructed in the year 1600, and is cut out of a single piece of oak. M. Flammarion discovered this pulpit in the Chapel of Saint-Sang at Bruges, a small church built in the year 1150, and restored in the sixteenth century and since.

THE DAVY-FARADAY RESEARCH LABORATORY.

THE Davy-Faraday Research Laboratory, established and equipped by Dr. Ludwig Mond, was opened by the Prince of Wales on Tuesday, December 22. We have already expressed our appreciation of this generous gift to British science, and have described the accommodation and equipment of the new laboratories (vol. liv. p. 200). With a munificence which we hope will find many imitators, and a just regard of the value of scientific research, Dr. Mond has established a place where investigations can be carried on without interruption, and with the best appliances. He has not only furnished the laboratory with the most modern instruments and appliances for researches in pure and physical chemistry, but has also given an ample endowment, so that the laboratory may be maintained in a state of thorough efficiency, his object being to give every assistance and encouragement, within the limits of the endowments, to scientific workers. To accomplish this has cost a hundred thousand pounds, of which sum 38,000*l.* is sunk in the building and its equipment, while the remaining 62,000*l.* constitutes the endowment fund. For the very practical way in which Dr. Mond has shown his interest in the promotion of material knowledge, men of science cannot express too warm a sense of gratitude. We look to the workers in the laboratory to repay the generosity of the founder by their contributions to knowledge, and so induce other benefactors to follow the example set by Dr. Mond.

The following account of the opening of the laboratory, abridged from the report in the *Times*, will be read with interest:—

Dr. Mond, addressing the Prince of Wales, said that under the auspices of his Royal Highness's august father, whose enlightened mind had fully realised that the pursuit of pure science was the most potent factor in the promotion of the intellectual as well as the material progress of this or any other nation or of humanity at large, a movement was set on foot fifty years ago to found an institute for the pursuit of pure chemistry, which was not only to give practical and systematic instruction to students, but was also to provide a place where original research could be conducted by fully-qualified investigators. At first it was proposed to attach this institute to the Royal Institution. The eminent professors of the time, Faraday and Brande, expressed their strong approval of the intended project, and their desire that it might be carried out at the Royal Institution, if it could be done well; but, nevertheless, this idea had to be abandoned, because sufficient accommodation could not be found within the precincts of the institution. The first part of the scheme was carried out a few years later by the foundation of the Royal College of Chemistry, which, under the guidance of the illustrious Hofmann, became one of the most successful schools of chemistry in the world; but the second part, that of providing a place where original researches could be carried on by a number of independent investigators, had been waiting all this time for its realisation. Several years before these facts came to his knowledge he had determined of his own accord to found in London a laboratory of research in purely scientific chemistry and in physical chemistry, that borderland between chemistry and physics from which, in his opinion, they might hope to learn more about the real nature of things than from any other branch of natural science. He also had come to the conclusion that such a laboratory would derive the greatest advantage if it could be associated with the Royal Institution of Great Britain, which had during its long existence made the promotion of original research in these sciences one of its main objects, and the laboratories of which had been productive and